PHENIX

T.E.C. TESTING PROCEDURE IN 832

procedure name

PHENIX Procedure No. PP-2.5.2.6-01

Revision: A **Date: 10-21-98**

Hand Processed Changes

HPC No.	Date	Page Nos.	Initials

Approvals

PHENIX S E & I Date

Cognizant Scientist/Engineer Date /Activity Manager

PHENIX QA/Safety / Date

RHIC ES&H Date

REVISION CONTROL SHEET

LETTER	DESCRIPTION	DATE	WRITTEN BY	APPROVED BY	TYPED BY
A	First Issue	10/21/1998	n/a	E. O'Brien, A. Etkin, W. Lenz, others unintelligible	n/a
RETIRED	Testing completed. Procedure no longer needed	2/14/2007	(Retirement note written by. D.Lynch)	Retirement approved by D. Lynch, R. Pisani and P. Giannotti for the PHENIX experiment	n/a

1.0 Purpose and Scope

This procedure provides instruction for starting up the PHENIX TEC High Voltage Test to be performed in 832.

2.0 Responsibilities

Operator is responsible for performing the TEC test and recording the results.

3.0 Prerequisites

3.1 Operator shall have current training in BNL Elec. Safety I and LO/TO authorized.
3.2 TEC HV can only be adjusted by Ed O'Brien, Achim Franz , Jack Mahon or Rob Pisani
3.3 Persons adjusting gas system should have current training in BNL Gas Cylinder Safety.
3.4 P-10 gas must have been flowing to the TEC for 4-5 volume turnovers prior to turning on voltage.

4.0 Precautions

The total energy stored in the TEC with High Voltage on is low, ~ 10 mJoules, adjusting the voltage is not dangerous from a personal safety stand point. Additionally, all HV points are covered on the TEC such that one would have to remove covering material in order to feel any shock. However, there is significant risk of damaging the equipment, the TEC, without proper operation of the HV. That is why we restrict the operators of the test.

5.0 HV Procedures

5.1 Move TEC plane into position
5.2 Place yellow isolation chain around TEC to ensure appropriate working clearance.
5.3 Place padded Al C-channels on top of TEC window for window support
5.4 Attach gas lines to TEC and flow P-10 for 4-5 volume turnovers. TEC volume is 10 cu ft. Do not flow at a rate over 2 SCFH, 1 SCFH is typical once purged. See TEC Gas System Procedure 5.100.
5.5 Attach HV cables checking the labels Anode, Drift Window, Wire Cathode 2 Back Window
5.6 Attach Low Voltage grounding cables
5.7 Install grounding boards
5.8 Place HV-ON sign in prominent position.
5.9 Turn on HV warning light
5.10 Set Bertan supplies to Trip-Hold

5.11 Set HARDWARE current limit to 80% 100 microamps
5.12 ONCE TEC GAS IS OK HAVE EXPERT (Ed O'Brien, Achim Franz, Jack Mahon, or Rob Pisani)BEGIN BRINGING ON HV.
5.13 Raise voltages to prescribed settings as shown on display and in log book. Anode voltage set at 100V below log book values. (Typically anode logbook=+1600V)
5.14 If current on any channel is 5 microamps or more after 3 minutes reduce voltage until current is below 5 microamps.
5.15 If the chamber is drawing 5 microamps of current or more at 100V + below logbook settings slowly try to condition the chamber by setting the chamber at the anode voltage for 5 microamp current and wait 15 minutes plus for the current to drop below 5 microamps. Then raise the voltage 10-20 Volts and repeat the process until at logbook anode voltage settings - 50V. If the chamber supply trips during this process reset the voltages to just under the trip point and continue the conditioning process.
5.16 Perform HV test:
Set Voltages on chamber at logbook setting with anode voltage set 50V below logbook values.
5.17 Maintain chamber at this setting for 2 hours minimum, until the chamber is stable and does not trip for 1 hour plus.
Raise chamber voltage to logbook settings, including the anode wires.
5.18 Maintain chamber at full voltage setting for 6-8 hours. NOTE: Ensure area is secured.
5.19 Raise chamber logbook settings such that anode wires are at 50V above logbook.
5.20 Maintain voltage at this setting for 1-2 hours, noting physical location of chamber trips, if any.
5.21 Once tests are complete reduce HV via dial until 0V and then turn off Bertan supply.
5.22 Turn off HV warning light.
5.23 Remove HV ON sign.

5.100 Gas System Procedures

5.101 Put 2 stage P-10 regulator on restrained P-10 gas Bottle.
5.102 Attach regulator output to low pressure regulator input on TEC gas panel.
5.103 Attach gas system input line to TEC.
5.104 Attach TEC gas output to gas exhaust outside the building.
5.105 Turn-on bottle noting bottle pressure.
5.106 Adjust bottle regulator output to 2-5 psi..
5.107 Low pressure regulator should have its maximum pressure preadjusted to 2-3 " of H2O. This should not need to be changed. Check the pressure gauge on gas panel once flow is turned on. It should be significantly less than 3" H2O.
5.108 Turn on flow to gas panel.
5.109 Set Input flowmeter to between 1.0 and 1.5 SCFH. Do not exceed 2.0 SCFH.
5.110 Check pressure gauge regularly in the first hour to make sure chamber pressure does not exceed 0.25" H2O. The pressure should plateau at 0.2" H2O or less.
5.111 The output flowmeter bypass valve can be adjusted to reduce the internal

chamber pressure if necessary.

5.112 When the HV Test in successfully completed prepare the chamber to transport by shutting off the gas flow. Close the valve of the P-10 bottle.

5.113 Let the detector depressurize.

5.114 When the pressure gauge on the TEC gas panel reads 0.01" H2O or less disconnect the input and output gas lines from the TEC.

5.115 Place plugs in ends of TEC input/output gas fittings.

6.0 Documentation

Documentation shall be kept in the HV Test Logbook. See also PHENIX TEC Procedure 5 for operating TEC test gas system.